

but that is a point which can only be ascertained by diligent search. The importance of the discovery can hardly be over-rated, now that the forests of Singapore have been almost entirely exhausted."

5. "On some Plants which have recently flowered in the Royal Botanic Garden," by Professor Balfour. These plants were *Tricyrtis pilosa*, *Boucerosia Munbyana*—noticed by Munby in his Flora of Algiers, and *Erianthus japonicus*. The last had been sent to the garden under the name of Nepal Sugar-cane. Major Madden writes—"E. japonicus occurs all along the Himalaya from Assam up to Simla, growing on the northern sides of the mountains in damp woods, and generally near rivulets, up to 7000 feet, or perhaps 7500, and is a fine species. It has only recently been identified as the Japan plant, and you will find it frequently noted in Griffith's Journals as *Saccharum rubrum*. It has, however, no saccharine qualities, and does not merit the name of Nepal Sugar-cane."

Mr. M'Nab laid before the Meeting a table of observations of the lowest temperatures indicated by the Register Thermometer kept at the Botanic Garden during January and February 1855, from which it appears that the—

Average lowest temperature for January was 31° Fahr.

„ „ „ for February 23°.

And the average lowest temperature from the 15th January to the 28th February 23°.

MISCELLANEOUS.

ORIGIN OF WHEAT.

THE experiments of M. Fabre on the Origin of Wheat, and the consequent conclusions adopted by several distinguished naturalists, that most of our cultivated wheats were derived from species of *Ægilops*, have excited great interest on the continent of Europe. Botanists, whose ideas on the specific distinction of plants marked by slight differences have been carried very far, have felt that their principles would be much shaken if it were admitted that two plants in their opinion so totally different had a common origin, and several refutations of M. Dunal's arguments have been attempted, although hitherto without much success.

M. Godron, of Besançon, one of the authors of the 'Flore de France,' now in course of publication, has just, however, communicated to the 'Annales des Sciences Naturelles,' the result of his observations and experiments, which he considers as removing all weight from the arguments of MM. Fabre and Dunal by accounting otherwise for the phænomena on which they were founded.

The *Ægilops triticoides*, the intermediate form or transitional state between *Æ. ovata* and wheat, is, according to M. Godron, when growing wild, found on the edges of wheat-fields in a country where *Æ. ovata* is a common weed, and under other circumstances of growth, which suggested to him the idea that it was a natural hybrid between

those two plants. He has confirmed this view by actual experiment, fertilizing *Æ. ovata* with the pollen of wheat, and thus producing artificially the *Æ. triticoides*.

M. Godron concludes, therefore, that "the observations made by M. Fabre on the *Æ. triticoides* do not in any manner prove that our cultivated wheat has for its origin the *Æ. ovata*, nor that one species can transform itself into another." Some friends of his in German journals go further, and assert that he has positively disproved M. Dunal's conclusions.

We have nothing to say as to the transformation of one "species" into another, for, according to our notion of the meaning of the word, this circumstance would but prove that the two supposed species were in fact only varieties or races more or less permanent of one species. We would, however, make some observations on the remainder of M. Godron's paper.

It is admitted that *Triticum sativum* and *Ægilops ovata* are strictly congeners, as confirmed by the form of the caryopsis; that *Æ. triticoides* is the first known instance of a hybrid among grasses; that M. Fabre raised from seeds of a wild *Æ. triticoides* plants which produced perfect seed, which he again sowed and continued the operation during twelve successive generations; that during these twelve years' careful cultivation the plants gradually acquired more and more the character of wheat; and that *Æ. triticoides* is occasionally, though rarely, found in sterile places surrounded by vineyards.

But M. Godron observes that there were abundance of wheat-fields in the neighbourhood of the spot where M. Fabre carried on his experiments, from whence the pollen might have been wafted so as to fecundate his plants and produce that gradual assimilation according to the laws of hybrids. So also in the case of the *Æ. triticoides* in the midst of vineyards, there was quite wheat enough cultivated in the surrounding country for some of the pollen to have found its way over to the parent plant of *Æ. ovata*.

Even admitting this extraordinary dispersive power of the pollen of wheat, and that *Æ. triticoides* as now produced is always of hybrid origin, it appears to us that this very great facility of natural hybridization in a family where it is so rare as to have been hitherto unobserved, would appear to prove much rather that the two plants had a common origin, than that they are really distinct species.

Another point much relied on by M. Godron is, that the first start from *Æ. ovata* to *Æ. triticoides* is very great, and that there are no intermediates between two plants so distinct as to be universally admitted as species. That such should be the case with M. Godron's artificial crops would naturally be expected, but that it is so in the wild plant remains to be proved. Most of the supposed species of *Ægilops*, in the South of Europe, are very variable, and run so much one into another, that few botanists can agree as to what are or are not species amongst them.

With regard to the rarity of *Æ. triticoides*, in a wild state, we may observe as a well-known fact, that when aberrant forms of natural species are produced from causes unknown to us, and therefore termed

accidental varieties, various circumstances tend in a wild state to restrict the number of individuals, or cause the varieties to disappear altogether, whilst they may be rendered permanent by cultivation.

In our opinion, therefore, all that M. Godron has proved is, that *Triticum sativum* and *Ægilops ovata* are species so nearly allied, that they hybridize with a facility very unusual amongst grasses; but we assert, that this is no proof that the two plants are distinct species.

To this we would add, that neither M. Godron nor M. Alexis Jordan, who has filled 100 pages of the Memoirs of the Academy of Sciences of Lyons with speculations upon the origin of domesticated plants, have attempted to explain what the origin of wheat has been, if it is not a domesticated condition of *Ægilops*, as M. Fabre's experiments, in our opinion, prove it to be.—*From the Gardeners' Chronicle for March 10, 1855.*

Mr. Busk's Anomalous Shell. By Prof. J. S. HENSLow.

To the Editors of the Annals of Natural History.

Hitcham, Suffolk, April 17, 1855.

GENTLEMEN,—I had not seen Dr. Gray's explanation of Mr. Busk's anomalous Oyster-shell till after I had forwarded my notice of the fossil in the Ipswich Museum, which I considered likely to offer a solution of the mystery. I have since been favoured by Mr. Busk with an oyster-shell attached in the way described by Dr. Gray, and I am quite disposed to admit that gentleman's explanation to be the correct one. Dr. Gray has also written to me to say he "described in the 'Philosophical Transactions' for 1833 the fact, that the peculiarities on the surface of a body to which a shell is attached are sometimes shown on the surface of the upper or free valve." The Ipswich specimen is therefore only an additional illustration of a fact long since noticed by my distinguished friend.

Yours faithfully,

J. S. HENSLow.

On the Fructification of the Arachis hypogæa.

By HUGH M. NEISLER, Columbus, Geo.

In studying our *Stylosanthes* a few years ago, my attention was attracted by a note in Torrey and Gray's Flora of North America, vol. i. p. 354, viz., "Mr. Bentham, in a paper on the affinities of *Arachis*, read before the Linnæan Society in 1838, gives an account of the two kinds of flowers in *Stylosanthes*, and shows its affinity to *Arachis*, which he considers a genuine *Hedysarea*." I presumed that he supposed the *Arachis* to have two kinds of flowers, but, wishing to inform myself accurately as to his views, I mentioned the subject to Dr. Torrey in the course of our correspondence, who remarked in reply: "Mr. Bentham says, that *Arachis* has two kinds of flowers. Those that have all the parts do not perfect their fruit;